REMARKS

Claims 1 and 8 stand rejected under 35 USC §103(a) as being unpatentable over Coe, et al in view of Whitehead and Kitazume. This rejection is respectfully traversed. In order for a prima facie case of obviousness to be made out based on a combination of references such as these three, motivation must be found in and identified from the cited references themselves for the combination. As will be explained in the remarks that follow, there is no motivation to combine the references cited and thus no prima facie case of obviousness. Thus, although some of the features of the presently claimed invention are in fact present in the cited references, those references cannot be combined because of the failure to identify the motivation for doing so. Furthermore, some claimed features are neither taught nor in any of the prior art reference cited.

Briefly recited, Applicants' invention is a handheld, tire-tread-depth measuring probe. The probe includes a housing with a handle and a tire-side-engaging bracket at the proximal end. A range finder carried within the housing directs a beam of light through a housing window and traverses from the handle end to the distal end to obtain the tread profile. To use the probe, it is placed in engagement with the tire (while the tire may still be on the wheel of a vehicle) and moved so that the window faces and engages the tread, and the bracket engages the side of the tire. Then the range finder traverses the tire, producing an output related to the tread depth across the tire. The output of the range finder is processed and displayed.

Coe, et al teaches an approach to measuring tire tread depth that is nearly the opposite of that of Applicants. The Coe, et al tire is removed from a vehicle and supported by a framework that permits rotation of the tire on a shaft; Applicants measure *in situ*. No part of

the Coe, et al probe engages the tire tread or tire side, and the probe does not move with respect to the framework; rather the tire is rotated and translated to profile its surface. Applicants engage the tire, their probe and their tire are stationary but their range finder moves. Coe, et al, move the tire with respect to a stationary light source; Applicants move the light source with respect to a stationary probe. Coe, et al, avoid contact with the tire (because the tire needs to be rotated during measurement and contact affects the measurement); Applicants contact the tire. Coe, et al, profile the entire tire; Applicants make a single profile measurement across one part of the tread.

Whitehead also teaches a tire tread depth measuring apparatus. His detector, which may be in the form of a hand-held probe, is held away from the tire and he uses "non-normal illumination" specifically to "enable[s] the detector to be situated remote from the surface of the tire" to simplify the scanning mechanism (Col. 1, lines 37+). Whitehead avoids moving parts in his device except possibly for a rotating mirror (Col. 1, lines 54+), and instead uses a linear array of photodetectors and a line of illumination (Col. 2, lines 50+, and Col. 5, lines 6+). In other embodiments he has a set of rollers that engage the surface of a tire and thereby facilitate rolling the device around the circumference of the tire.

Whitehead's device is similar in many aspects to Applicants' invention but it also has significant differences. Just as taught in the present application, Whitehead teaches a hand held probe that measures tire tread depth by placing the apparatus in engagement with the tire tread. However, whereas Whitehead uses light from a reflected line light source produced from off-normal light, Applicant has a traversing range finder that directs light normally onto the tread.

Kitazume of course does not teach a tire tread depth-measuring device. Rather, he teaches a device for measuring irregularities in the road surface. The device is designed to obtain irregularity information at high speed either mounted on a pair of legs or to a vehicle. Therefore, having the probe engage the road surface is out of the question, and indeed, the probe is held at "a predetermined heigh: above the road surface" (Col. 1, lines 52+). The probe traverses the road surface repeatedly transverse to the direction of motion to obtain the measurements as it is moved over the road surface.

Coe, et al, Whitehead, and Kitazume teach two different tire tread measuring devices and a road irregularity measuring device. Those of ordinary skill may not combine the features of Coe, et al, and Whitehead because their approaches are different. There is no suggestion, for example, in Coe, et al or Whitehead to make Coe, et al's device a hand held probe, nor to orient his light source to be off-normal. Similarly, those of ordinary skill in the art would not find motivation in Kitazume to make Coe, et al's probe or Whitehead's probe traverse the tire. Kitazume is measuring the irregularities of a road rather than a tire and, because of the scale of the road compared to the tire, requires the traversing. His traversing, because the speed of it is related to the speed of the vehicle, is designed to produce data that is speed independent. Whitehead, furthermore, teaches away from traversing because it would increase the number of moving parts, something he seeks expressly to avoid. There is no suggestion in Coe, et al that traversing is needed.

All three of course avoid direct surface engagement by their probes. Coe, et al repeatedly and expressly indicates that his device is a "non-con tacting probe." Whitehead separates his probe from the tire (although in one embodiment his rollers engage the tire, not

for the purposes of measurement, but rather for facilitating rotating the spaced probe around the surface of the tire.

None of the references teaches a bracket that engages the side of the tire. Coe, et al, as stated above, repeatedly emphasizes that his probe does not contact the tire. He holds the tire on a framework but does not touch the tire itself. His tire is turning. Nothing should be touching it anywhere.

Whitehead also lacks a bracket for engaging the side of the tire and Kitazume is not measuring the tread of a tire at all but a road and does not have a bracket that engages the side of the road.

The office action states that Coe, et al does not teach means for moving the range finder parallel to the window but Kitazume does this. Further, the office action states that the motivation to add the traversing probe is " to provide means for moving a range finding means/laser within a housing as taught by Kitazume for the purpose of including a movable range finding means." The requirement, repeatedly emphasized by the Court of Appeals for the Federal Circuit, of identifying the motivation to combine references is to avoid the pitfall of hindsight. Here no motivation is provided as to why someone of ordinary skill in the art should provide movable range finding means to Coe, et al. Thus the office action fails to provide motivation for adding movable range finding means to Coe, et al.

The office action states that it would be obvious to modify Coe, et al to provide gripping means and a communications port as taught by Whitehead. Again the office action does not cite motivation for this modification. The prima facie case of obviousness is not made out without motivation coming from either or both of the cited references. Coe, et al,

need no handle on their probe because no one needs to grip it. Furthermore, it does not need a communications port on the handle; a person of ordinary skill would put the communications port on the probe itself, which is not applicants' invention.

Claims 2-7 and 9-14 stand rejected under 35 USC §103(a) as unpatentable over Coe, et al in view of Whitehead. The previous remarks regarding in inappropriateness of combining Coe, et al and Whitehead apply here as well. In particular, the combination of elements in claims 1 and 8, the claims from which claims 2-7 and 9-14 depend, is not obvious in view of Coe, et al and Whitehead, alone or in combination.

All of these claims include the moving range finder, which is not taught by Coe, et al and Whitehead.

In addition, the office action states that it would be obvious to modify the design of Coe, et al and Whitehead to make an arcuate edge, as Applicants' claim because "applicant has not disclosed that this arcuate edge solves any stated problem other than supporting a tire and it appears that the invention would perform equally as well with any type of tire support."

On the contrary, Applicants have clearly articulated the benefit of the arcuate edge and emphasizes this feature: "Preferably, the housing has an concave arcuate portion formed therein to define two edges of the housing that can act as supports on either side of the window to rest against the tire. When the device is pushed laterally toward the near side of the tire until it engages the tire, the device is then stabilized and in position to make a measurement." "The bracket and arcuate housing make it easy to position against the tire so that it is stable." [Both quotes from page 2 of the specification.] Applicant submits that this feature is not taught or made obvious by the cited references alone or in combination. The arcuate edge does not

support the tire, as stated in the office action; rather, it helps to position the probe and make it stable so that it is in position to make a measurement.

The office action states that, per claim 3, it would have been obvious to modify the apparatus of Coe, et al to include a gripper but no motivation is provided for doing so. As stated above, since Coe does not move his probe (he moves the tire), there is no motivation to add a gripper to it.

Claim 11 is rejected, according to the office action, because "Whitehead teaches an apparatus that contacts the rolling surface of the tire therefore it would have been obvious to a person in the art of tire analysis at the time the invention was made to engage the surface as taught by Whitehead or the side wall for the purpose of profiling a particular surface of the tire." Whitehead does not teach means for engaging the side of a tire, nor is it obvious to do so in a tire tread depth-measuring means. There is no tread on the side of a tire. Applicants' side engaging means facilitates the stability and alignment of the device and the accuracy of the measurement, as stated in the specification. None of the references teach this claimed feature or make it obvious. Whitehead's specification does not mention the " rolling surface" of the tire and obviously engages only the periphery of the tire and not its sides.

With regard to the rejection of claim 12, Applicant states clearly in the specification that the window contacts the surface of the tire: " The housing of the probe is placed against the tire with the slit and its window facing the tread. Preferably, the housing has a concave arcuate portion formed therein to define two edges of the housing that can act as supports on either side of the window to rest against the tire. When the device is pushed laterally toward the near side of the tire until it engages the tire, the device is then stabilized and in position to

make a measurement." [page 2] "During operation, probe 10 is held against tire 12 with the plane of window 60 parallel to the tangent of tire 12 and the two edges 52, 54 of housing 20 against the surface of tire 12 and bracket 50 against the side of tire 12. This "three-point" contact allows probe 10 to have a complete view of tread 14's cross section and be stable for the measurement. Stability is important to preserve the integrity of the line of reference to the tire defined by the movement of the range finder 70." [page 5] Thus the arcuate portion is important to the successful operation of the invention as claimed in claim 12.

Claims 15 and 19-24 stand rejected under 35 USC §103(a) an unpatentable over Whitehead. The remarks with respect to Whitehead apply here as well. It is admitted in the office action that Whitehead does not teach engaging the tire but stated that it would be obvious to do so "for the purpose of having a contact apparatus as opposed to a non-contact apparatus." Applicant disagrees, and so does Whitehead: "Preferably the portion of the tire under inspection is not in contact with a surface. Thus the portion of tread under inspection is not under a compressive load during the test." (Col. 1, lines 50+). Whitehead (and Coe, et al) teach away from contacting the tire surface for a measurement, making it non-obvious in view of Whitehead to contact the tire surface.

In summary, Applicant' s tire engaging probe with bracket on the end proximate to the handle is not obvious in view of the prior art references alone or in combination. Furthermore, no motivation is provided for making the combination or for modifying the prior art devices in the manner described in the specification, in particular, in adding a handle to Coe, et al, in making either Coe, et al or Whitehead tire engaging, or in making the probes of Coe, et al or Whitehead traverse the profile of the tread in view of Kitayama.

In view of the foregoing amendments and remarks, Applicant believes that the present application is in condition for allowance and reconsideration of it is requested. If the Examiner disagrees, he is requested to contact the Attorney for Applicant at the telephone number provided below.

Respectfully submitted,

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